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ring mostly in hyperplastic growths and forming a transition to that subject. Hyperplasy exhibits itself in two general types; homoeoplasy, where the elements of the abnormal tissue are the same as those of the tissue from which it is derived, and heteroplasy, where the elements are in part or all different. The latter contains by far the greatest number of cases. Under it are grouped most calluses, wound cork, wound wood, and the vast majority of galls. The latter are very extensively discussed. Most of the galls caused by parasitic plants come under the heading of kataplasms, while the highly organized galls, of definite structure and form, mostly of insect origin, are discussed under the heading of protoplasms.

The final chapter is devoted to theoretical considerations, and is in many respects the most interesting chapter in the book. Here are considered, so far as our knowledge will allow, the factors causing the various modifications of cells and tissues. The stimuli themselves are discussed, the reaction of cells and tissue to the stimuli, and finally the comparative sensitiveness of different tissues to the stimuli. This chapter, so far as it goes, is a valuable contribution to the study of the developmental mechanics of plants.

The illustrations are, as a whole, very good, as they illustrate clearly the structural features. They are, with few exceptions, line drawings, and a trifle over half are original. An extensive working bibliography is found in the footnote references.—ERNST A. BESSEY.

MINOR NOTICES.

STRASBURGER'S² Das botanische Practicum has reached the fourth edition. It seems safe to say that no botanical text-book of modern times is more fully abreast of the present state of knowledge. While the new edition preserves the general arrangement and sequence of subjects which have proved satisfactory in previous editions, each subject has been carefully revised and brought up to date, even matters like the latest investigations upon protoplasmic connections receiving attention. The newest methods in technique are also presented.

The indices are more extensive than in any previous edition, occupying 145 pages. There are five, as follows: I. An alphabetical index of the plants which are used as illustrative material. II. A list of plants used as illustrative material, arranged with reference to the time of year at which they should be collected. III. A list of stains and reagents. IV. Reagents, stains, plant substances, imbedding media, and sealing media; chemical exercises; instruments, apparatus, and their use; making of preparations; and physical exercises. V. General index. The first two indices will be suggestive and helpful to those who have the responsibility of keeping laboratories supplied with illustrative material. The fourth index is so full that in

² STRASBURGER, EDUARD, Das botanische Practicum. Fourth edition. 8vo. pp. 1+771. figs. 230. Jena: Gustav Fischer. 1902. M 20.

very many cases it will hardly be necessary for the well-informed teacher to look up the reference in the body of the book. This book is not to be confused with the *Handbook of Practical Botany* "by Dr. E. Strasburger," which is the fifth English edition of a translation by Hillhouse of an earlier edition of *Das kleine botanische Practicum*. Some of the defects of this English edition, which bears Professor Strasburger's name, although it does not represent his views, were noted in the April (1902) number of the GAZETTE.— CHARLES J. CHAMBERLAIN.

THE LAST two parts of Wiesner's 3 Die Rohstoffe des Pflanzenreiches have just appeared from the press of Wilhelm Engelmann. This completes the second volume and the work, and is accompanied by title-pages and index. Unhappily the latter is in two parts, one containing the names of crude materials and the other the systematic names of the plants from which they are derived. The two should have been combined, so as to make only one place to look for any item. But a thorough index is such a boon, and one so often denied us by German authors, that we readily condone a superfluity. The present double Lieferung contains the conclusion of the twenty-third section on fruits (pp. 801-871), and, far out of its place, the rest of the seventh section on woods (pp. 872-1027) by Professor Dr. Karl Wilhelm. In this part a description is given of the woods of deciduous trees, both as to their general and microscopic characters, with remarks on the uses to which the wood is put. Over one hundred kinds are described, some including several species. Of ten or a dozen the botanical derivation is not known. -C. R. B.

THE FIRST number of Annales Mycologici under the editorship of H. Sydow, announced in the BOTANICAL GAZETTE for December, has appeared. It contains 96 pages, and the following list of contributors gives promise of a very strong journal: P. Dietel, H. and P. Sydow, P. A. Saccardo, A. von Jaczewski, C. Wehmer, F. Cavara, L. Matruchot, P. A. Dangeard, and J. Bresadola. It should be suggested to the editor that a table of contents would make the journal much more convenient for consultation.—J. M. C.

NOTES FOR STUDENTS.

Molisch finds 4 that the red color produced in the leaves of a number of species of Aloe when brought into open sunlight from the greenhouse is not due to anthocyan but to the red coloration of the chloroplasts themselves.

³ Wiesner, Julius, Die Rohstoffe des Pflanzenreiches. Versuch technischer Rohstofflehre des Pflanzenreiches. Zweite gänzlich umgearbeitete und erweiterte Auflage. 11 und 12 Lieferung. 8vo. pp. 801–1071. $figs.\ 249-297$. Index to both volumes. Leipzig: Wilhelm Engelmann. 1903. M 10. (Two vols. unbound, M 60; bound M 66.)

⁴Molisch, H., Ueber vorübergehende Rothfärbungen der Chlorophyllkörner in Laubblättern. Ber. Deutsch. Bot. Gesells. 20:442-448. 1902.